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AUTHOR Doty, Charles R.
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ABSTRACT

This paper explores why comprehensive high schools should consider implementing tech prep and what they need to know about tech prep programs. It first presents 14 principles of high school-community college articulation (the basis for tech prep). Following these principles, the paper explores the history of tech prep, definitions by Congress, and definitions by others. It then outlines some tech prep models, lists their components, and describes a tech prep example. A discussion of what Congress wants and the potential meaning of the tech prep articulation model for education follows. Finally, the following resources for implementing tech prep are listed: three publications on apprenticeship; names and addresses for two clearinghouses, five curriculum centers, one database, and six guidance sources; four guides; three newsletters; four sources for resources for special education; one publication on technology; and one book on workplace basics. Contains 14 references. (KC)

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TECH-PREP ARTICULATION
Is This an Answer for the Forgotten Half?

by
Charles R. Doty

> The lesson is clear. If America's schools are in trouble. It's because they've been turned into political play pens. Before this country gets back to basics, it needs to get serious. (Wall Street Journal, May 10, 1991, p. A10)

This article is designed to present 'whys', plus 'what', 'how' and 'where' for comprehensive high school principals to consider for implementing Tech Prep. Charles King, principal East Brunswick High School and Peter F. Karycki, principal, Spotswood High School, N. J., critiqued this chapter and suggested the principles for articulation be given first for the principal with limited reading time followed by a full explanation for principals who must have complete knowledge. Carol Mauermeyer and Angela Bodino, Raritan Valley Community College, N. J., Tech Prep Project Co-Directors, also edited and made substantive suggestions based on their experience. Following the principles, history, definition by Congress, definitions by others, Tech Prep models, components, Tech Prep example, what Congress wants, potential meaning for education, and resources for implementing Tech Prep will be given. If this sounds formidable, remember that in education there is no ultimate victory; there is only the constant battle.

Principles for Vertical Articulation from Secondary Schools to Community and Technical Colleges

For 15 years the author promoted articulation between secondary schools and community/technical colleges in the state

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of New Jersey. As a result of this effort an article was written in 1985 that outlined seven principles of high school-community college articulation. The seven principles in that article, verified by experience, are:

1. The state administrations should support articulation in word, action, and funding.
2. The instructors at both institutions, i.e., secondary and postsecondary, must be initially involved in the decision making process.
3. The persons, e.g., instructors, involved in the articulation process must be given credit for work load and/or monetary compensation.
4. Provision of time and compensation must be made for technical upgrading for instructors. Instructors cannot be expected to pay for upgrading.
5. A joint advisory committee should be established for communication between institutions to make recommendations on curricula.
6. Articulation contracts must be written that specify exact responsibilities for the parties involved. The contracts should be reviewed annually.
7. An atmosphere of "good faith" must prevail throughout the articulation process. All institutions engaged must be equal partners. (Doty, 1985, pp. 100-101)

In recent consulting experiences, the author found high school administrators to be supportive of the Tech Prep initiative. The faculty of the community colleges and high schools are very enthusiastic and are desperately seeking information to help their students. The word desperate is used because the high school teachers are the academic and work readiness teachers for students considered at-risk-students; students for whom there seems to be no adequate curriculum that motivates them sufficiently, and community college career faculty need additional students and know the students need their knowledge to succeed.

Based on this additional experience other principles might

be appropriate for consideration:

Vocational educators regard Tech Prep as a program for articulating vocational programs with higher education, which Tech Prep is not, at least, this is not the main purpose. The main purpose is to create a new alternative for educating persons for an advanced technological job market. A careful explanation of this purpose may partially ease vocational educators' confusion, but not anger.

Tech Prep is a secondary-college partnership that will require secondary schools to prepare the students for successful entry into college. Social promotion and low academic standards are not acceptable for Tech Prep programs.

All teachers and counselors employed in the future should have a minimum of three to five years full time work experience outside education, e.g., mathematics teachers should have experience applying mathematics problem solving in business and industry. Until educators have full time work experience upon which to base their instruction there will be little realistic connection with work environments that are required for Tech Prep and the transition from school to work and life.

A balance between student needs and economic needs must be maintained to prevent another generation of forgotten students. The principal must decide if tracking students into two areas, college prep and tech prep, is the proper educational delivery system. The author's opinion is that there must be four or more quality delivery systems, e.g. 1) college preparation, 2) techprep/community/technical college/apprenticeship, 3)vocational education, and 4) cooperative education to serve the various populations. The author estimates from his prior research (1990) that not more than 26% of those identified as non college bound students will be able to complete a Tech Prep program. This estimate leaves, at least, 74% of the high school students considered at risk or less advantaged still in the 'forgotten half' category.

Principals planning and implementing Tech Prep should ensure that students have financial resources, i.e., money and transportation, for continuing into postsecondary education. This is the one most serious exclusion$ in the legislation and by authorities. There seems to have been no thought that the less advantaged, for whom Tech Prep is promoted as an educational alternative, may lack money to attend postsecondary education. Assuming that postsecondary education is necessary for success in the future, high school principals should assume the leadership in

campaigning for free postsecondary education for students who qualify.

Principals must determine if community college administrators and faculty are supportive of Tech Prep or are using the program for recruiting for academic curricula to protect jobs. The goal of Congress is to educate persons in technology, not in traditional academic areas.

In recruiting students into Tech Prep, the students should be taught what was expressed by Cora M. Drewry, Hoechst Celanese Corporation, Somerville, N. J., "From a business industry point of view, we want persons not coming out of school sooner but coming out better prepared."

History

Vertical articulation, two plus two and tech prep are three related factors which may dominate the next step in the evolution of the American public school system. Vertical articulation is a traditional term meaning a structured curriculum between grade levels designed to avoid duplication and ease the learning process for students, e.g., teaching lettering in the first grade and script in the second grade; also a structured curriculum between grade school, junior high school, high school, and college. Two plus two, before 1980, meant vertical articulation between community colleges or technical institutes and four year colleges or universities. Since 1980 two plus two evolved to mean vertical articulation between high schools and community colleges/technical institutes. In effect vertical articulation and two plus two are arrangements usually not legislated that were the result of educators developing some agreement to articulate curricula between grade levels and institutions.

On September 25, 1990 a new development occurred, Public Law 101-392, titled the Carl D. Perkins Vocational and Technology

Education Act Amendments of 1990. The United States Congress passed "Title III- Special Programs, Part E, Tech-Prep Education Act" in another desperate attempt to encourage educators to focus future curricula on real life and the nation's economic needs as well as each individual's needs. This Act is Congress' attempt to solve or prevent some social/economic ill. Congress had studied America and its education system and found illness in both. As Newman stated in Collaborating with High Schools, "One fascinating tendency of the United States is that it often has turned to education when facing a crisis...Today the onset of international competition continues the trend of focusing on education as a solution" (1988, p. 6). Congress, subsequently, stated several findings, assumptions and suggestions. Some are, "rapid technological advances and global economic competition demand increased levels of skilled technical education preparation and readiness on the part of youths entering the workforce ... effective strategies reaching beyond the boundaries of traditional schooling are necessary ... a combination of nontraditional school-to-work technical education programs using state-of-the-art equipment and appropriate technologies will reduce the drop out rate ... the establishment of systematic technical education articulation agreements between secondary schools and postsecondary educational institutions is necessary for providing academics, including literacy instruction in the English language, and with the intense technical preparation necessary for finding a position in the changing workplace" (SEC. 342. Findings and Purpose). Congress authorized $125 million for

Tech Prep and has to date appropriated $63.4 million. Present plans are for full appropriation.

Definition and Funding of Tech Prep Programs by Congress

The following is given to assist principals concerning the most essential information on Tech Prep federal legislation. Principals can use these definitions as criteria to determine if their Tech Prep proposals meet the intent of the law.

Section 347. Definitions, (3), of the Act contains the definition of a tech prep program which is a combined secondary and postsecondary program that:

> "(A) leads to an associate degree or 2-year certificate; "(B) provides technical preparation in at least 1 field of engineering technology, applied science, mechanical, industrial, or practical art or trade, or agriculture, health, or business; "(C) builds student competence in mathematics, science and communications (including through applied academics) through a sequential course of study; and "(D) leads to placement in employment.

An elaboration of the above definition is given in Sec. 344 (b) of the Act titled Tech-Prep Education Programs in which the program contents are specified as:

> Consist(ing) of the 2 years of secondary school preceding graduation and 2 years of higher education, or an apprenticeship program of at least 2 years following secondary instruction with a common core of required proficiency in mathematics, science, communications, and technologies designed to lead to an associate degree or certificate in a specific career field;

There is, unfortunately, no clarification in the Act or Regulations concerning where apprenticeship for Tech-Prep programs should be offered, secondary or postsecondary. High school principals will need to learn what specific state policy governs this factor to avoid involvement in political

fighting over who controls apprenticeship.

Sec. 344 (b), 4 and 5, of the Act also contains the provision that inservice training for teachers and counselors is a part of a Tech-Prep Program. Another provision in this section is that Tech-Prep is for all students including an emphasis that Tech-Prep be made available to special populations; i.e. special populations have equal access as do general populations. The Act does not specify that Tech-Prep is designed solely for any particular population as has been claimed in recent articles.

Regulations for the Act, within Part 406, State Administered Tech-Prep Education Program, 406.3, are that funding may be awarded for articulation that:

> Consist(s) of two years of secondary school preceding graduation and two years of higher education, or an apprenticeship training program of at least two years following secondary instruction, with a common core of required proficiency in mathematics, science, communications, and technologies designed to lead to an associate degree or certificate in a specific career field.

Definition of Tech Prep by Others

Two definitions will be given to illustrate the diverse interpretation of what Tech-Prep means:

> A Tech Prep/Associate Degree Program is the technical education alternative to college prep. It is targeted for, but not limited to general education high school students, the forgotten half. A Tech Prep/Associate Degree Program rests on a foundation of applied academics, courses that incorporate real-life applications and hands-on experience into the teaching of academic subjects. A Tech/Prep Associate Degree Program is a carefully designed curriculum that engages a high-school student in a four-year (2+2) or six-year (4+2) plan to gain the competencies (knowledge, skills,

> and values) required for technical careers. (Hull & Parnell, 1991, p. 46)
>
> Tech prep is an educational initiative that promotes increased cooperation and communication between local educational agencies and postsecondary institutions for the purpose of improving the quality of instruction and employment potential of students, particularly those enrolled in general or vocational education. It represents a trend in educational reform that employs strategies of articulation and integration between secondary and postsecondary levels of education to improve the credentials, certification, and transition of students into successful employment. Its strength lies in the partnership commitment it promotes between academic and technical educators, secondary and postsecondary education institutions, and education and the business community to provide a program that is competitive with a college prep program and that responds more directly to industry's real needs. (Mensel, 1991, p. 9)

The first definition seems to be the one that Congress specified as a priority, i.e., engineering technologies, for meeting international competition. The second is a broad statement of purpose and process that targets business and industry needs for a better prepared pool of talent.

Within the efforts to define Tech Prep are such statements as, "Tech Prep represents a shift away from the traditional job skills orientation of vocational education and toward the broader purpose of using vocational education as a vehicle for learning academics and others kinds of thinking skills and for linking thought with action" (Wirt, 1991, p. 424). Such interpretation stems from Wirt, et al., National Assessment of Vocational Education in which a conclusion was, "Given its sizable role [in serving college preparation high school students], if vocational education could contribute to academic skills development, it would be an important new vehicle for preparing youth with

marketable academic as well as occupational skills. Expanding its academic potential should be a major objective of federal policy" (1989, p. 51). What Wirt seems to be proposing is to destroy the purpose of vocational education [entry level job preparation upon high school graduation] in order to educate persons for "academic careers"; a direct contradiction to what Congress wants and some individuals need and want. This 'academic' thinking derives its history from the criticism of vocational education as being 'terminal'. The author asks, what does terminal mean to an academician? The answer seems to be, a person who does not go to college is uneducated and a failure. Principals will have many questions to answer concerning the purposes of any Tech Prep program, especially if articulation involves an existing vocational program which has the historic goal of preparing persons for entry level employment upon high school completion. When one considers that academic skills and vocational skills are complimentary, perhaps one might restate Wirt's words in the form of the 'fact' that academic skill should be taught in the context of how they are used in work and life rather than 'using' vocational education as the means of instruction.

Tech-Prep Models

There are many proposed Tech Prep models. Some are:

> Advanced placement (time shortened) in which the duplication in offerings is reduced in order to offer advanced placement to high school students entering a 2 year college program. Students have the option to complete occupational certificate or degree programs more quickly. (VE Bibnotes, 1991, p. 1.)

Advanced skills programs in which the purpose is to

streamline occupational training for grades 11-14 in order to make room for more advance training. Students graduate at a master technician level. (VE Bibnotes, 1991, p. 1)

2 + 2 agreements in which the high school provides general vocational education and community colleges provide more specific vocational and technical education. This model involves the last two years of high school and community college/technical college.

4 + 2 agreements in which articulation begins in the ninth grade and continues through the community/technical college.

Cluster model as implemented in St. Mary's County, Maryland in which students begin study "in one of four clusters-applied business/management, applied engineering/mechanical, applied health/human services or four year college university preparation. Within each of these clusters are specialties-24 in all" (Lefwich, 1992, p. 27). Figure 1 is an illustration of one specialty within a cluster.

Apprenticeship model in which the secondary school provides academic instruction in cooperation with a community college/technical institute that coordinates a two year apprenticeship program with rigorous technical courses.

Tech-Prep Components

Dornsife (1992) explains that no matter what type of Tech-Prep program is designed there are four main components to include: 1) information/marketing campaigns, 2) curriculum development, 3) career guidance, and 4) program improvement. Within these components, programs should include: an articulation agreement between the participants; a 2 + 2 or an apprenticeship program at least 2 years following high school instruction; a common core required proficiency in mathematics, science, communications, and technologies designed for an associate degree or 2 year certificate in a specific career field; Tech-Prep education program curricula appropriate to the consortium participants' needs; inservice education for teachers to

CLUSTER: Applied Engineering/Mechanical Technologies

Specialization: Drafting

Grade 9	Grade 10	Grade 11	Grade 12
English	English	English	English
Social Studies	Social Studies	Social Studies	Social Studies
Civics	World History	U. S. History	Contemporary Issues
Mathematics	Mathematics	Mathematics	Mathematics
Elements of Algebra or Algebra 1	Elements of Geometry or Algebra 1 or Geometry	Algebra 1 or Geometry or Applied Mathematics 2 or Algebra 2	(Algebra 2)
Science	Science	Science	Science
Earth Space Science	Biology	Principles* of Technology	(Principles of Technology 2)
Introduction to Industry & Technology	Communications Technology- Tech. Drawing	Elective	Drafting 2
Fine Arts	(Typing 1) or Introduction to Computers	Drafting 1	Drafting 2
Physical Ed.	(Applied Technology Exploration)*	Drafting 1	Drafting 2

*Applied Academic Instructional Materials, e. g. mathematics, biology, chemistry, physics, technology, are available from the Center for Occupational Research and Development. (Leftwich, 1992, 29)

Figure 1. Example of Tech Prep, Cluster Approach, St. Mary County, Maryland

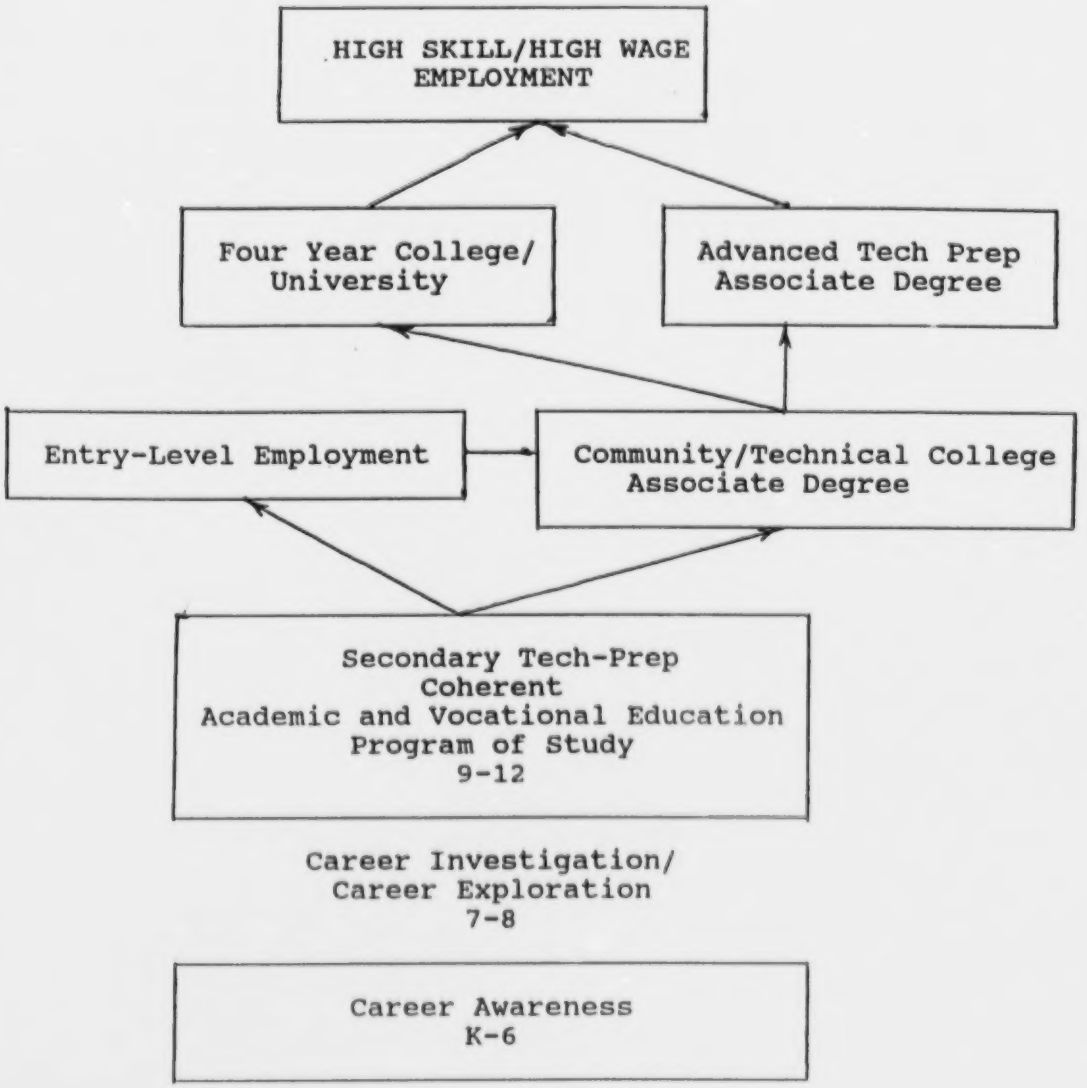
cusfigm1

implement Tech-Prep education curricula; joint training for teachers from all participants in the consortium scheduled at the teachers' convenience; training programs for counselors to enable them to recruit students for Tech-Prep programs, assist in student retention, and appropriate job placement; equal access to the full range of technical preparation programs for members of special populations; and preparatory services which assist all participants in Tech-Prep programs.

Tech-Prep Example

The Texas model for a Tech-Prep AAS Degree provides a specific example (Fig. 2) of what Congress intended. To be a Tech-Prep AAS degree program, the program must provide:

> A six year program of study beginning in the ninth grade and lead to an AAS degree with advanced skills from a public community college or technical college. This is a 4 + 2 program.
>
> A cooperatively-developed (business, industry, labor, secondary and higher education), competency-based technical education curriculum which is non-duplicative and which effectively integrates academic and technical competencies.
>
> Graduation plans or programs of study which specify a coherent sequence of technical and college preparatory and college-level general education courses which span secondary and higher education levels.
>
> Student competence in critical thinking skills and application of mathematics, science and communication skills, as well as integration of workplace-transfer technical and academic skills.
>
> Student workplace basic skills.
>
> Integrated workplace and classroom learning experiences which provide theoretical and applied instruction and practical experience in a business or industry connected with the area of study.
>
> Opportunities for advanced technical skills training and/or baccalaureate study.


HIGH SKILL/HIGH WAGE EMPLOYMENT
Four Year College/ University
Advanced Tech Prep Associate Degree
Entry-Level Employment
Community/Technical College Associate Degree
Secondary Tech-Prep Coherent Academic and Vocational Education Program of Study 9-12
Career Investigation/ Career Exploration 7-8
Career Awareness K-6

(Hendricks, 1992, Sec. III-10)

Figure 2. State of Texas Tech Prep Associate Degree Program Model

> A coordinated delivery system for educational and social preparatory and support services for students, including special populations students, to ensure access to program participation and student achievement.
>
> A comprehensive career development guidance program for students beginning no later than the seventh grade and continuing throughout the program
>
> A comprehensive and continuous professional development program for secondary and higher education academic and vocational/technical faculty, counselors, other staff, and administrators involved in Tech-Prep programs.
>
> A method to identify and follow the progress and outcomes of Tech-Prep students throughout the program. (Hendrix, 1992, pp. Sec. III-8-9)

What Congress Proposed and What is Happening?

An analysis of P. L. 101-392 and literature reveals that the good intentions of Congress may not, in fact, be accomplished in the legislation. Swanson (1991) astutely identified the problem, that Congress wants technical level competency and yet in the Act stresses funding those proposals for Tech-Prep that focus on the less advantaged. In a speech before the New Jersey Consortium on Community Colleges the author defined high technology as "A person who changes the basic elements of a natural substance or a previously human made substance into a new substance or a similar substance with different properties and capabilities. This ability to change the basic elements of a substance to produce a new substance requires using highly sophisticated equipment and processes. The person involved in this level of technology is highly educated; i.e., the product of years of intense, quality education. Any other person is an inventor of uses for the new substance and user of products from

high technology." The engineering technology person that Congress wants is that 'other person' also a product of years of quality education. One definition for delineating the difference between vocational education and technical education is that technical education requires a minimum of advanced algebra whereas vocational education requires less than that level. Engineering technology, the first priority in Congress' list requires advanced mathematics for that 'other person'. High school principals must determine if the Tech Prep program being considered will serve the students who may have limitations which will make success impossible.

Congress embedded the Tech-Prep Act within vocational legislation which has caused confusion among vocational educators. Vocational educators regard Tech Prep as a program for articulating vocational programs with higher education, which Tech Prep is not; at least, this is not the main purpose. The main purpose is to create a new alternative for educating persons for an advanced technological job market. A new program that will eliminate duplication of coursework, grant advanced placement in postsecondary education, offer a smoother transition from one educational level to another, and provide advanced technical education. A careful explanation of this purpose may partially ease vocational educators' confusion, but not anger.

The education of less advantaged was mixed with the national economic need for technical personnel in the Act. Helping the less advantaged is certainly a major goal, but if both goals are to be achieved, i.e., developing qualified technical personnel

and helping less advantaged to overcome their disadvantages, more than the present Act is necessary. The principals will have to determine what resources are necessary to achieve both goals.

What Congress should do is stop using vocational legislation for multiple and possibly unattainable goals. Vocational education should not be expected to solve social ills, more so than other types of education, as well as provide job skill education. Nor should vocational education be 'used' for motivating students solely for academic purposes. The analogy of this is using sports to motivate students to stay in school or until football/basketball season is over.

Another problem that Congress seems to be unaware is that increases in academic requirements for the high school diploma since 1980 have resulted in enrollment severely declining in comprehensive high school secondary vocational education. These requirements have also virtually eliminated enrollment in other practical and fine arts programs; nor is there any support for continuing traditional job specific vocational education (Grubb & McDonnell, 1992, p. 11). Grubb and McDonnell stated, "As a result vocational offerings in most comprehensive high schools have typically dwindled to a few typing classes and other business-oriented classes, some home economics, agriculture in rural schools, and perhaps one or two courses in industrial arts or technology" (p. 11). In a recent study (Doty, 1990), a follow up of all non college bound high school graduates in Somerset County, N. J., guidance counselors stated, with some satisfaction, that vocational education was now the

responsibility of the county area vocational high school; that their schools were no longer comprehensive and no longer had the problems concerned with persons wanting vocational education. The author wonders why there is such disregard for students who want vocational education?

The author has observed that career guidance, distinguished from college guidance, may be becoming extinct at the high school level. If this is true for the nation, there must be a major effort to reemphasize career guidance. Career guidance is the key component in Tech Prep programs. Guidance counselors must know college guidance and career guidance; i.e., academic careers and technological careers. Career guidance is also a necessary component for those students planning to enter the workforce after high school rather than enrolling in postsecondary education. Principals must reexamine the reward system for persons involved in career guidance. This examination will be difficult due to the single success criterion for high schools, i.e., the number of students applying for college.

Concerning other enrollment in secondary schools, even area full time and shared time vocational high school (AVTS) enrollment has been reduced. Those enrolled in AVTSs now include persons with academic, physical, mental, and social problems; persons who may not desire or be able to enter postsecondary education or apprenticeship programs, unless given considerable help.

As a result of reduced work readiness curricula in comprehensive high schools, a phenomena may be occurring in

community colleges. Career educators in some community colleges are having difficulty recruiting high school graduates. One assumption by college faculty is that the students, not having exposure to areas other than academics, are remaining with what is familiar to them. Another phenomena is that baccalaureate, liberal arts graduates are enrolling in increasing numbers in technical curricula offered by community colleges and technical colleges in order to obtain employment. Principals must determine if their students are learning enough about the world of work and themselves to make intelligent working world decisions concerning majors in college. A good career guidance program is a key for helping students avoid errors.

Principals desiring to employ work readiness teachers in the future will find a limited supply. College and university undergraduate and graduate vocational education and related work readiness programs are rapidly being eliminated. For example, the Psychology Department, Graduate School of Education, Rutgers University, recently voted to eliminate vocational guidance because the faculty had no interest in the area.

The 'alternate route' for preparing work readiness teachers as well as all other types of teachers, prekindergarten through the twelth grade, has been envisioned as an answer to a projected faculty shortage, but this source is not providing enough qualified and committed teachers as verbally reported to the author over the last six years by principals in over 100 schools within commuting distance to Rutgers University. The principals'

preference is teachers who have been prepared via college and university teacher education programs and who have business industry experience. Principals must communicate to political leaders and postsecondary institutions what types of teachers and support faculty are needed.

What Does Tech Prep Potentially Mean for Education?

William D. Ford, Chairman, Committee on Education and Labor, U. S. House of Representations stated:

> Tech prep is the wave of the future. Within a decade I believe that most high schools will have two sequences of courses for their students-college prep and tech prep. Tech prep can make sense out of high school for students who currently flounder around in general track programs without goals. (Getting Behind Tech Prep, 1992, p. 26)

Dale Parnell, Commissioner, Oregon Community Colleges, wrote:

> We have allowed the traditional college/prep baccalaureate degree curriculum to be the only definition of excellence in secondary and collegiate education despite the fact that 75 percent of the typical high school student body will not likely complete a bachelor's degree. Second, and most important, we have allowed much of the school and college work to become disconnected from real life issues. ... The tech prep/associate degree program is rapidly becoming a key strategy in improving ... education. It is a four-year educational plan that offers an excellent curricular alternative to the traditional secondary school college prep and general education studies. (Getting Behind Tech Prep, 1992, p. 26)

Hudelson in his article Roots of Reform: Tracing the Path of "Workforce Education" wrote:

> Frequently tech prep and youth apprenticeships are seen as solutions to all education problems. When asked about the future of vocational education, one state superintendent replied, "there is no more voc ed! There's only tech prep and apprenticeship now!"

> But current school-to-work transition reforms may overlook two important groups. The first is high school students who take a single vocational course to prepare them for college or give them needed skills, such as future architects and engineers who take drafting while in high school.
>
> The second group involves those students who simply are not interested in education beyond high school are not ready to tie themselves ... to an ... apprenticeship. At age 16 or 17, many students simply are not ready to choose their life's work, but they do need skills that will help them earn a living. (1992, p. 69)

What principals must do is examine the educational philosophy and subsequent goals of the community to determine if all people are being served effectively by the educational system which she/he administers. The author's opinion is that if only college prep and Tech Prep remain many students will again find themselves forgotten and lose interest in being educated. Principals must try to convince their school boards that the curriculum must include other alternatives to serve a diverse student population.

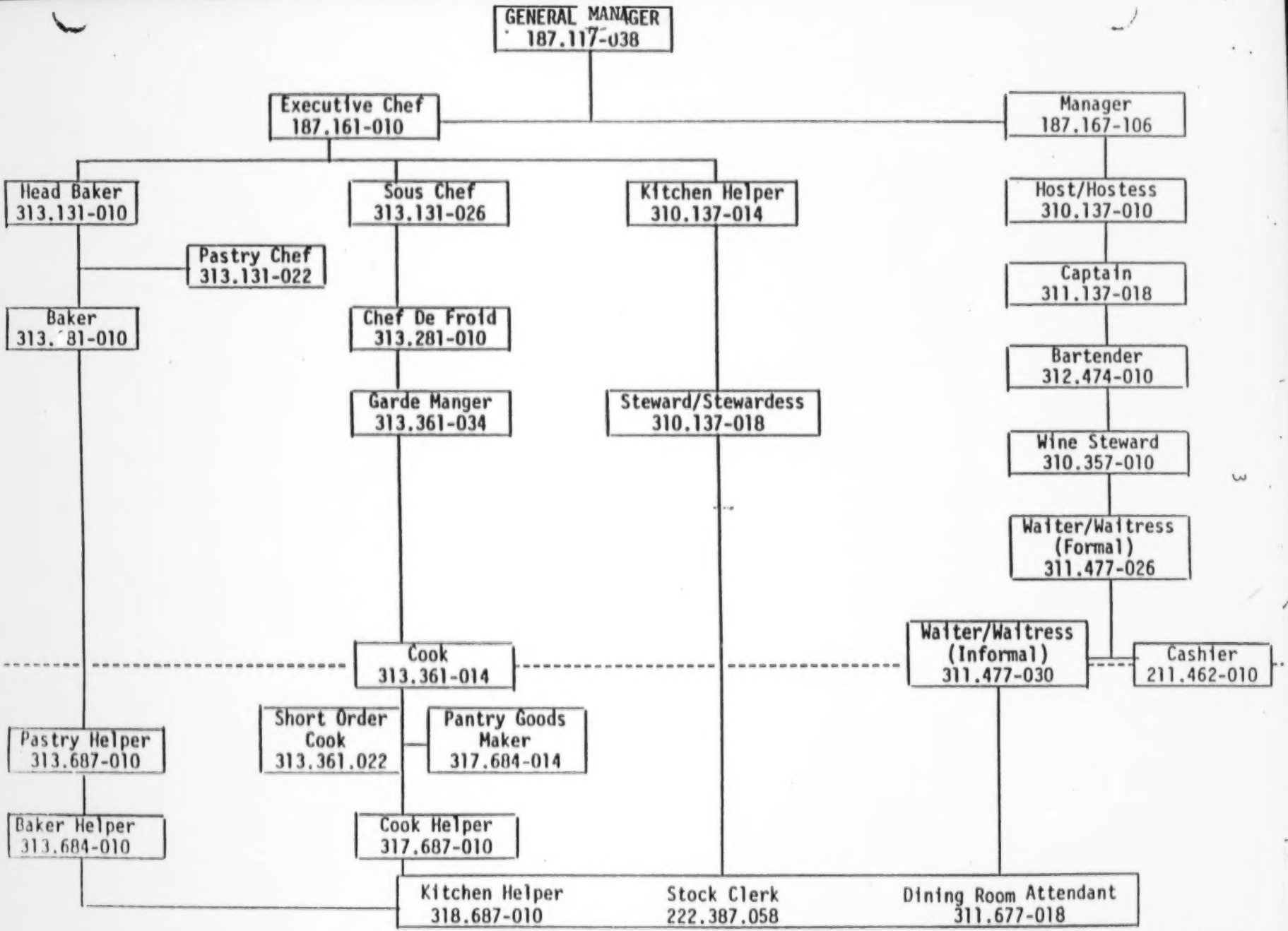
Principals must consider another factor that is mentioned neither by Congress or in the literature, that is, the added cost for postsecondary education. If Tech Prep is, indeed, for the forgotten half, who will help these students pay for the additional expense of postsecondary education? If high school is not enough for preparing the youth for life and work, two years of postsecondary education must become a part of mandatory education or funded for all students who wish to continue their education. School principals must lobby for such a system. If such funding is not feasible, principals must reemphasize quality work readiness programs at the secondary level.

Get Serious

As stated in the Wall Street Journal the country needs to get serious. The Tech Prep Act is insufficient, as motivational funding, to change the nation's schools. Yet, the effort is commendable, if not considered the only solution for producing technically skilled people and helping students considered being the 'forgotten half'. Congress must continue funding the Tech Prep initiative because work readiness programs are eliminated when Congress discontinues funding. The reason given for elimination is that work readiness curriculum is too expensive. Economists and others such as prison officials have shown that elimination of work readiness curriculum is eventually more expensive than the initial cost of such programs. Logically, principals must campaign to ensure funding is continued, if positive results are found for students.

Tech Prep Resources

The following have been selected as the best resources for a school system planning and implementing a Tech Prep program. For example, Figure 3 from the Michigan Career Education Resource Center, illustrates the food service career ladder. Those jobs which are taught at the secondary level are below the dotted line, those for the community/technical college level are above. The guide from which Fig. 3 was obtained contains competency based curriculum including the related academics that must be taught for this cluster (Food Production, Management and Services Curriculum Guide, 1986, p. 3). Please note that all National Center for Research in Vocational Education (NCRVE) publications



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FOOD SERVICE CAREER LADDER

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Figure 3. MODEL FOR ARTICULATION BETWEEN SECONDARY AND POST-SECONDARY SCHOOLS

are available on microfiche (ERIC data base) and from NCRVE, Materials Distribution Center, Western Illinois University, 46 Horrabin Hall, Macomb, Ill. 61455, (800) 637-7652.

Apprenticeship

Employment & Training Administration, Bureau of Apprenticeship and Training, 200 Constitution Ave., N. W., Room N-4649, Washington, D. C. 29210, (202) 219-6540. [For information on traditional apprenticeship programs, i.e., for 18 year old persons. Recommend writing to this source for information due to small staff.]

Office of Work Based Learning, Training Policy Unit, Youth Apprenticeship, Department of Labor, 200 Constitution Ave., N. W., Room N-5626, Washington, D. C. 20210, (202) 219-5281. [Recommend writing to this source for information due to small staff. Non traditional apprenticeship programs presently being pilot tested.]

Youth Apprenticeship in America: Guidelines for Building Effective Systems. Available from William T. Grant Foundation Commission on Work, Family and Citizenship, Suite 301, 1001 Connecticut Avenue, N. W., Washington, D. C. 20036, $8.00.

Clearinghouses

Adult, Career and Vocational Education ERIC Clearinghouse, Ohio State University, 1900 Kenny Road, Columbus, Ohio 43210-1090, (800) 848-4815.

National Tech-Prep Clearinghouse of Resources. NNCCTVE, East Central Region, Sangamon State University, F-30, Springfield, Ill. 62794-9243, (217) 786-6173, FAX (217) 786-6036.

Curriculum Centers

The reader should know that hundreds of millions of dollars have been spent in curriculum development, curriculum that will be of value to persons planning Tech Prep programs. Following is a very select group:

DACUM Resource Center, Dundalk Community College, 7200 Community College, 7200 Sollers Point Road, Dundalk, Maryland 21222, (301) 285-9869.

Michigan Career Education and Vocational Education Resource Center, Michigan State University, College of Education, 133-E Erickson Hall, East Lansing, MI., 48824-1034, (517) 353-4397.

National Tech Prep Network, CORD/NTPN, 601 Lake Air Drive, Waco, Texas 76710, (817) 772-8756.

National Network for Curriculum Coordination in Vocational and Technical Education consists of six regional curriculum centers and a network of state liaison representatives. The East Central Curriculum Coordination Center, Sangamon State University, F-2, Springfield, Il 62794-9243, (217) 786-6375 is recommended as an initial contact.

Vocational-Technical Education Consortium of States (V-TECS), 1866 Southern Lane, Decatur, GA 30033-4097, (404) 329-6543 or (800) 248-7701. This Consortium has competency based curricula for over 150 occupations as well as the Automated Cross Referencing Occupational System (ACROS).

Data

COLMIS. A database for state and local occupational labor market information. The system delivers summaries of occupational and labor market information by state, county and local area. Information available from each state occupational information coordinating committee (SOICC). [Contact NOICC, (800) 654-4502 or Harvey Ollis (202) 653-5671 or Jim Woods (202) 653-5665)]

Guidance

Career Development and Technology Institute, College of Education, University of South Carolina, Columbia, S. C. 29208, (202) 653-7680.

Career orientation and planning profile (COPP). A new process for career guidance. Also A philosophical foundation of vocational guidance by Shigekazu Fukuyama. Available from Center on Education and Training for Employment, 1900 Kenny Road, Columbus, Ohio 43210-1090, (800) 848-4815, FAX (614) 292-1260 or (614) 292-4277 for the Fukuyama publication.

Hendrix, M. W. (1992, September). Counselor's resource guide. Available from Educational Development & Training Center, East Texas State University, Commerce, Texas 74529, (903) 886-5624.

National Occupational Information Coordinating Committee Training Support Center (NOICC), 1500 West 7th Ave., Stillwater, OK. 74074, (800) 654-4502. [One of the six National Network Centers, NOICC Center for Occupational data, and source for the National Career Development Guidelines for career counselors.]

State Occupational Information Coordinating Committee. Within each state is a state coordinating committee that provides information and workshops concerning career/vocational guidance. For example, Improved Career Decision Making Through the Use of Labor Market Information (CIDS), Career Information Delivery Systems (CIDS), Career Development Portfolio [system being pilot tested during 1993], job demand data per city, county and state, etc. State committees may be located by calling the National

Information Coordinating Committee Training Support Center.

Guides

Bragg, D. B. (1992, December). Implementing tech prep: A guide to planning a qualitative initiative. Berkeley, CA.: National Center for Research in Vocational Education. (ERIC Document Reproduction Service No. [to be assigned])

Dornsife, C. (1992, February). Beyond articulation: The development of tech prep programs. Berkeley, CA.: National Center for Research in Vocational Education. (ERIC Document Reproduction Service No. 342 925)

Faulkner, S. L., Beeken, L. A., & Nay, L. A. (1992, October). Proceedings from a national conference on community college professional development: Sharing what works. Berkeley, CA.: National Center for Research in Vocational Education. (ERIC Document Reproduction Service No. [to be assigned])

Hull, D., & Parnell, D. (Comps.). (1991). Tech prep associate degree: A win/win experience. Waco, Texas: Center for Occupational Research and Development, Inc. (ERIC Document Reproduction Service No. ED 331 539) [Also available from the American Vocational Association, Dept. 93B, 1410 King Street, Alexandria, VA. 22314, (800) 826-9972.

Newsletter

Open Entries: A Competency Based Education Information Exchange. National Center on Education and Training for Employment, The Ohio State University, 1900 Kenny Road, Columbus, Ohio 43210-1090, (800) 848-4915.

School to Work Transition & Comprehensive High School

For the person planning a coherent curriculum the following two resources are recommended:

Copa, G. H., & Pease, V. H. (1992, December). New designs for the comprehensive high school (Vols. I-II). Berkeley, CA.: National Center for Research in Vocational Education. (ERIC Document Reproduction Service No. ED [to be assigned])

Pautler, A. (Ed.). (1993). High school to employment transition. Ann Arbor, Michigan: Prakken Publishers.

Special Education

Materials Development Center, Stout Vocational Rehabilitation Institute, School of Education and Human Services, University of Wisconsin-Stout, Menomonie, Wis. 54751, (715) 232-1342.

Missouri LINC, University of Missouri-Columbia, College of

Education, 401 East Stewart St., Columbia, MO. 65211, (314) 882-2733. [Special Education Dissemination Center]

Technical Assistance for Special Populations Programs (TASPP), University of Illinois, 345 Education Building, 1310 South sixth St., Champaign, Ill. 61820, (217) 333-0807.

Technology

Technological Horizons in Education. Circulation Dept., 150 El Camino Real Suite 112, Tustin, CA. 92680-9833. [Free subscription available to schools. Contents range from indepth discussion of educational problems to computer and other technological applications in administration and classrooms.

Workplace Basics

Carnevale, A. P., Gainer, L. J., & Meltzer, A. S. (1990). Workplace basics: The essential skills employers want. The American Society for Training and Development best practice series: Training for a changing work force. San Francisco: Jossey Bass Publishers.

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Doty, C. R. (1991, October). Follow up study of non college bound Somerset County high school graduates June 1990. New Brunswick, N. J.: Rutgers University, Graduate Vocational-Technical Program. (ERIC Document Reproduction Service No. [to be assigned])

Doty, C. R. (1985, Spring). Vertical articulation of occupational education from secondary schools to community colleges. Journal of Studies in Technical Careers, VII(2), 98-112. (ERIC Document Reproduction Service No. ED 272 673)

Getting Behind Tech Prep. (1992, October). Vocational Education Journal, 67(7), 26.

Grubb, W. N., & McDonnell, L. M. (1991, July). Local systems of vocational education and job training: Diversity, Interdependence, and effectiveness. Berkeley, CA.: National Center for Research in Vocational Education.

Hendrix, M. W. (1992, September). Counselor's resource guide. Commerce, Texas: Educational Development and Training Center.

Hudelson, D. (1992, October). Roots of reform. Vocational Education Journal, 67(7), 28-31-69.

Leftwich, K. (1992, April). On the right track. Vocational Education Journal, 67(4), 27-29.

Mensel, F. (1991, January 1). Tech-prep funding. Community,

Technical and Junior College Times, 3(1), 9.

Newman, F. (1988). Reconnecting youth: The new wave of reform. In J. E. Lieberman (Ed.), Collaborating with high schools (pp. 5-11). San Francisco: Jossey Bass Publishers.

P. L. 101-392, September 25, 1990. Carl D. Perkins Vocational and Applied Technology Education Act Amendments of 1990.

Swanson, G. I. (1991, March). Vocational Education Journal, 66(3), pp. 30, 31, 45.

Review & Outlook. The school's burdens. Wall Street Journal. (1991, May 10), p. A10.

Michigan Career Education and Vocational Education Resource Center. (1991, Spring). VE Bibnotes, 6.

Wirt, J. G., Muraskin, L. D., Goodwin, D. A., & Meyer, R. H. (1989, July). Summary of findings and recommendations: National Assessment of Vocational Education. Washington, D. C.: U. S. Department of Education.

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